

## PROTOCOL FOR ASSESSING BAT USE OF POTENTIAL HIBERNACULA

### RATIONALE

A typical cave or mine portal survey is an attempt to determine presence or probable absence of bats; it does not provide sufficient data to determine population size or structure, or to determine the number, type or relative abundance of bat species using a hibernaculum. Following these guidelines will standardize procedures for bat surveys at caves and mine portals. Although the capture of an endangered or threatened bat confirms its presence, failure to catch an endangered or threatened species solely using this protocol does not absolutely confirm its absence.

### ASSESSING SUITABILITY OF CAVES / ABANDONED MINES FOR BAT SURVEYS

In general, a cave or mine opening can be dismissed from bat surveys under any of the following circumstances:

- There is only one horizontal opening, and it is less than 6 inches in diameter, and no or very little airflow is detected.
- The opening is a vertical shaft less than 1 foot in diameter.
- The passage continues less than 50 feet and terminates with no fissures that bats can access. (This assumes the passage is safe enough to enter, and has been thoroughly inspected.)
- The mine is prone to flooding, collapsed shut and completely sealed, or otherwise inaccessible to bats.
- It is a “new” opening, which has occurred recently (less than 1 year old) due to subsidence.

*Additional notes: Bats can access mines via old open buildings such as a fan house. Foliage and other vegetation in front of mine openings do not stop use by bats. They can navigate through foliage. Collapsed entrances with multiple crevices between boulders, etc. are accessible to bats and should be sampled. Collapses completely sealed with fine soil are of course inaccessible to bats.*

### SAMPLING DATES, TIMES AND TEMPERATURE CRITERIA

- Sampling will be conducted between September 15 and October 15
- Sampling will start ½ hour before sunset and continue for at least 5 hours. This applies for all sampling methods (harp-trapping, mist-netting, use of bat detectors, etc.)
- During each sampling period, weather must provide for:
  - Temperatures >50°F (10°C) for first 2 hours of sampling and must not fall below 35°F (1.7°C) before the end of the first 5 hours of sampling.
  - At least 3 hours free of rain.
  - At least 3 hours free of high wind.
- Sampling will be conducted for at least 3 evenings (do not have to be consecutive), with at least 1 of the 3 sampling events occurring between September 25 and October 10.
- Noise and the shining of lights will be kept to a minimum with no smoking around the sample site. The use of radios, campfires, running vehicles, punk sticks, citronella candles and other disturbances will not be permitted within 300 feet of site during surveys.
- Before conducting surveys, local residents and/or law enforcement agencies should be informed of the scheduled nighttime activities.

## Appendix A

### EQUIPMENT

*No equipment, litter or other debris will be left unattended at site that could result in the capture or entanglement of any animals. Any equipment stored at site between sampling sessions will be clearly labeled with contact information.*

Harp Trap (first choice): Place in front of opening and block surrounding space with plastic sheeting or bird netting. Traps should be tended at least once per hour. When the catch rate is high (>25 bats per hour) or during inclement weather, traps should be tended more frequently.

Mist Nets (second choice): 50 denier, 38mm mesh. Place in front of or around openings that cannot be harp-trapped. Nets need to be monitored closely and checked at least once every 10 minutes. At sites with a heavy bat swarm, the net should be monitored continuously.

Bat Detector: In addition to the harp trap or mist nets, an ultrasonic bat detector should be on site to monitor bat activity when trapping or netting, and assess the general effectiveness of the harp trap or mist-net placement. Detector should be pointed toward cave or mine opening, approximately 5 to 15 feet from the entrance to detect swarming bats and bats going in/out of opening. Bat passes should be monitored and tallied on an hourly basis throughout the entire sampling period ( $\geq 5$  hours). Reporting format will be: Start and end time for each 1-hour interval and bat passes for that hour.

Alternative Monitoring Techniques: In situations where it is too dangerous to approach an entrance, night vision/infrared/thermal-imaging recording devices should be used to monitor and record bat activity to determine bat use of the site. However, this should be done in conjunction with acoustic monitoring (use of an ultrasonic bat detector, see above), so bats can be identified to species. Bat activity in or around the entrance can be monitored by counting bat passes with a bat detector, or night vision/infrared video tapes can be recorded to provide actual counts of bats entering and exiting the opening. Bat passes should be monitored and tallied on an hourly basis throughout the entire sampling period ( $\geq 5$  hours). Reporting format will be: Start and end time for each 1-hour interval and bat passes for that hour.

### REPORTING

In addition to reports for the client, the Pennsylvania Game Commission requires copies of the report as part of their permitting requirements. To simplify data entry, mandatory sampling summary forms are also required by the PA Game Commission for bat surveys within the Commonwealth. Provide copies of these reports and completed forms to both the PGC and USFWS. If the bat surveyor did not receive a copy of the data form with the permit, the form can be obtained by contacting:

Pennsylvania Game Commission  
Bureau of Law Enforcement, Technical Services Division  
2001 Elmerton Avenue, Harrisburg, PA 17110-9797  
717/787-5740

### INTERIOR WINTER HIBERNACULA SURVEYS

Sites that are determined to be safe for entry to conduct winter counts (primarily caves & stable hard rock mines) will be coordinated with the Pennsylvania Game Commission, Wildlife Diversity Section and scheduled for interior surveys between January 1 and March 10. Contact information for the Wildlife Diversity Section is:

PA Game Commission  
Bureau of Wildlife Management, Wildlife Diversity Section  
2001 Elmerton Avenue, Harrisburg, PA 17110-9797  
(717) 787-5529